# EXERCISES

For more exercises, see *Extra Skill and Word Problem Practice.*

## Practice and Problem Solving

**A Practice by Example**

**Example 1 (page 267)**

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**Solve each equation by factoring. Check your answers.**

**1.** $x^2 + 6x + 8 = 0$ **2.** $x^2 + 18 = 9x$ **3.** $2x^2 - x = 3$

**4.** $x^2 - 10x + 25 = 0$ **5.** $2x^2 + 6x = -4$ **6.** $3x^2 = 16x + 12$

**Example 2 (page 268)**

**Solve each equation by finding square roots.**

**7.** $5x^2 = 80$ **8.** $x^2 - 4 = 0$ **9.** $2x^2 = 32$

**10.** $9x^2 = 25$ **11.** $3x^2 - 15 = 0$ **12.** $5x^2 - 40 = 0$

**Example 3 (page 268)**

**Solve each equation by factoring or by taking square roots.**

**13.** $x^2 - 4x = 0$ **14.** $6x^2 + 4x = 0$ **15.** $12x^2 - 147 = 0$

**16.** $3x^2 = 48$ **17.** $2x^2 = 8x$ **18.** $4x^2 - 80 = 0$

**19. Firefighters** A smoke jumper jumps from a plane that is 1700 ft above the ground. The function $y = -16t^2 + 1700$ gives the jumper's height $y$ in feet at $t$ seconds.

**a.** How long is the jumper in free fall if the parachute opens at 1000 ft?

**b.** How long is the jumper in free fall if the parachute opens at 940 ft?

**Example 4 (page 269)**

**Solve each equation using tables. Give each answer to at most two decimal places.**

**20.** $x^2 + 5x + 3 = 0$ **21.** $x^2 - 7x = 11$ **22.** $2x^2 - x = 2$

**Example 5 (page 269)**

**Solve each equation by graphing. Give each answer to at most two decimal places.**

**23.** $6x^2 = -19x - 15$ **24.** $3x^2 - 5x - 4 = 0$ **25.** $5x^2 - 7x - 3 = 8$

**26.** $6x^2 + 31x = 12$ **27.** $1 = 4x^2 + 3x$ **28.** $\frac{1}{2}x^2 - x = 8$

**29.** $x^2 = 4x + 8$ **30.** $x^2 + 4x = 6$ **31.** $2x^2 - 2x - 5 = 0$

**B Apply Your Skills**

**32. a. Art** Verify that the Chinese painting at the right is a golden rectangle.

**b.** What element in the painting divides it into a square and another golden rectangle?

**33. Multiple Choice** The period of a pendulum is the time the pendulum takes to swing back and forth. The function $\ell = 0.81t^2$ relates the length $\ell$ in feet of a pendulum to the time $t$ in seconds that it takes to swing back and forth. The convention center in Portland, Oregon, has the longest pendulum in the United States. The pendulum's length is 90 ft. Find the period.

(A) 8.5 seconds (B) 10.5 seconds (C) 90 seconds (D) 111 seconds

**34. Open-Ended** Write an equation in standard form that you can solve by factoring and an equation that you cannot solve by factoring.

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